Enumerating limit groups: A Corrigendum

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Abstract

We discuss two possible interpretations of Definition 1.1 from [2].

In [2, Definition 1.1], we made the following definition:

Definition 1.1. *A coherent group G is* effectively coherent *if there exists an algorithm that, given a finite subset S as input, outputs a presentation for the subgroup generated by S.*

A class $\mathcal{G}$ of coherent groups is uniformly effectively coherent *if there exists an algorithm that, given as input a presentation of a group $G \in \mathcal{G}$ and a finite set S of elements of G, outputs a presentation for the subgroup of G generated by S.*

We intended the phrase 'presentation for the subgroup' to mean that the presentation has generating set S, so that one knows how the abstract group sits inside G as a subgroup. However, as pointed out to us by Maurice Chiodo, one could interpret our definition to mean that the algorithm merely outputs a presentation for the abstract group $\langle S \rangle$, without exhibiting an isomorphism between the group presented and $\langle S \rangle$.

In order to avoid further confusion, we propose the following definitions to distinguish the two related notions.

Definition 1.2. *A coherent group G is* effectively coherent *if there exists an algorithm that, given a finite subset S that generates a subgroup H as input, outputs a presentation $\langle S \mid R \rangle$ for H.*

We stress that the output presentation is required to be on the given input generating set S. This is equivalent to requiring that we are given an isomorphism between $\langle S\rangle$ and the output presentation.

Definition 1.3. *A coherent group G is* weakly effectively coherent *if there exists an algorithm that, given a finite subset S that generates a subgroup H as input, outputs a presentation for H as an abstract group.*

There are corresponding notions of *uniform effective coherence* and *uniform weak effective coherence* for classes of groups.

We emphasise that, as long as Definition 1.1 is interpreted as Definition 1.2, the results and proofs of [2] are correct as stated. However, if one interprets it as Definition 1.3 then some problems can arise—see [1], especially Theorem E.

Note that a locally Hopfian group (for example, a residually finite group) is effectively coherent if and only if it is weakly effectively coherent (cf. [1, Theorem F]).

We thank Chiodo for pointing out the ambiguity in our definition, and apologise for the confusion.

References

[1] M. Chiodo, Finitely presentable subgroups and algorithms, arXiv:1109.1792v2 [math.GR] (2011).

[2] D. Groves and H. Wilton, Enumerating limit groups, *Groups Geom. Dyn.* **3** (2009), 389–399.

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